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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/933,521      | 08/20/2001  | William Bell         | 1867-00202          | 7098             |

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| EXAMINER |
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BISSETT, MELANIE D

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| ART UNIT | PAPER NUMBER |
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1711

DATE MAILED: 07/03/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/933,521

Applicant(s)

BELL ET AL.

Examiner

Melanie D. Bissett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 14-19,24,25,31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24,25 and 32 is/are allowed.
- 6) ☒ Claim(s) 14-19,31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. The rejections using Firisch as a primary reference have been withdrawn based on the applicant's amendments. However, other rejections based on 35 USC 102 and 103 have been maintained. Additionally, claims have been rejected under 35 USC 112 for citing new matter.

2. The request filed on 6/20/03 for Continued Examination under 37 CFR 1.114 based on parent Application No. 09/933,521 is acceptable and an RCE has been established. An action on the RCE follows.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 14-19 and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims have been amended to claim surface areas greater than 750 m<sup>2</sup>/g or greater than 1000 m<sup>2</sup>/g. Although the specification may exemplify carbons having surface areas within the newly claimed ranges, there is no suggestion of a preferred range above 750 or 1000 m<sup>2</sup>/g. Specifically, the endpoints 750 and 1000 m<sup>2</sup>/g are not previously implied in the specification to suggest a preferred range to one skilled in the art.

***Claim Rejections - 35 USC § 102***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 15 and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Droege.
7. From a prior Office action:

Droege discloses open cell carbon foams made by pyrolyzing polyimide films, where the foams have densities of 300-900 mg/cm<sup>3</sup> (0.3-0.9 g/cm<sup>3</sup>), surface areas of 200-800 m<sup>2</sup>/g, and electrical capacitances of 10-80 F/g (col. 13 lines 50-59). In this case, it seems that the foams would have a volumetric capacitance of 3-72 F/cm<sup>3</sup> (ex. 10 F/g x 0.3 g/cm<sup>3</sup> = 3 F/cm<sup>3</sup>). Droege teaches the carbon foams as having pore sizes of 10-25 nm (col. 14 lines 2-4). Since the reference shows the carbon foams as useful in single applications and results from homogeneous mixtures, it is the examiner's position that Droege teaches monolithic structures (col. 12 lines 41-62). Additives such as metal fibers may also be included (col. 14 lines 49-65).

Regarding the measurement of capacitance using a non-aqueous electrolyte, the capacitance of the carbon materials is related to the mobility of the electrolyte, where pore size, surface area, and density can all be factors. It is the examiner's position that the carbon foams of Droege would inherently possess the applicant's claimed capacitance measured using non-aqueous electrolyte since the reference encompasses the applicant's claimed pore size, density, and surface area properties (Table 1).

8. Additionally, Droege teaches surface areas of up to about 1000 m<sup>2</sup>/g (col. 11 lines 46-53). Although the claims call for greater than 1000 m<sup>2</sup>/g, it is the examiner's position that one of ordinary skill in the art would envision surface areas just over 1000 m<sup>2</sup>/g by Droege's "about 1000 m<sup>2</sup>/g". Also, Droege teaches activation of the carbon materials (col. 13 lines 42-49).

***Claim Rejections - 35 USC § 103***

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
10. Claims 15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan in view of Droege.
11. From a prior Office action:

Tan discloses porous monolithic carbon films having a volumetric capacitance around 200 F/cc, a density between 0.7-1 g/cc, and a surface area greater than 1000 m<sup>2</sup>/g (col. 2 lines 8-14, lines 34-40). Aqueous and non-aqueous electrolytes are used to form a double layer capacitor (col. 1 lines 25-48). However, Tan teaches pore sizes of 6-15 Å (0.6-1.5 nm) (col. 2 lines 61-64). However, Droege has suggested that the mesopore size distribution, including pore sizes of 10-25 nm, serves to improve the formation of electrical double layer and increase in energy storage characteristics (col. 14 lines 5-14). Thus, it is the examiner's position that it would have been prima facie obvious to form carbon materials having pore sizes greater than 10 nm to optimize energy storage characteristics and formation of electrical double layers.

Regarding the measurement of capacitance using a non-aqueous electrolyte, the capacitance of the carbon materials is related to the mobility of the electrolyte, where pore size, surface area, and density can all be factors. It has been the examiner's position that it would have been prima facie obvious to increase pore sizes to increase the energy storage characteristics. It is the examiner's position that the carbon materials of Tan and Droege would inherently possess the applicant's claimed capacitance measured using non-aqueous electrolyte since the reference encompasses the applicant's claimed pore size, density, and surface area properties.

12. Additionally, Tan teaches activating the carbon materials (abstract).

***Allowable Subject Matter***

13. Claims 24-25 and 32 are allowed.
14. The following is a statement of reasons for the indication of allowable subject matter:

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15. The closest prior art, Firsich, discloses porous carbon monoliths having variable densities, surface areas of over  $500 \text{ m}^2/\text{g}$ , electrical conductivities of about  $25 \text{ s/cm}$ , capacitances of over  $200 \text{ F/g}$ , where the carbon materials are made by carbonizing polymer powder/carbon powder blends (col. 2 line 49-col. 3 line 9). An example shows a carbon material having a density of  $0.75 \text{ g/cc}$ , electrical conductivity of  $20 \text{ S/cm}$ , and a surface area of  $750 \text{ m}^2/\text{g}$  (example 1). However, the reference teaches away from an activation step, regarding this step as disadvantageous. Therefore, it is the examiner's position that the applicant's claimed porous carbon monolith materials are novel and unobvious over the prior art.

### ***Response to Arguments***

16. In response to the applicant's argument that Droege does not teach surface areas greater than  $1000 \text{ m}^2/\text{g}$ , it is the examiner's position that an overlap occurs, as stated above. Thus, it is the examiner's position that the reference anticipates the claims.

17. Regarding the applicant's arguments that Ran does not teach the claimed pore size, it is noted that the reference has been combined with a teaching of mesoporous pores. Both references are drawn to carbon materials derived from polymeric materials, where the materials are activated. The examiner has provided motivation for combining the references, where larger pore sizes have improved energy storage. The applicant argues that Droege teaches away from the applicant's invention because the carbons having large pore size decrease in density. First, it is noted that the claims do not limit a


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decrease in density with increasing pore size. Also, the densities cited in both references fall within the applicant's claimed range. Thus, combining the references would yield the applicant's claimed subject matter. Lastly, Table 1 in Droege indicates density and pore size values for four examples. It is the examiner's position that such a showing does not constitute a trend, especially since at least one of the examples deviates from the "trend". See example 4. It is the examiner's position that the references have been properly combined.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie D. Bissett whose telephone number is (703) 308-6539. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (703) 308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
James J. Seidleck  
Supervisory Patent Examiner  
Technology Center 1700

mdb  
June 29, 2003